

What is claimed is:

1. A valve apparatus comprising:
a housing defining an interior chamber, the housing including first and second ports communicating with the interior chamber;
a liquid separating the interior chamber into first and second portions, the first portion of the interior chamber being in fluid communication with the first port, and the second portion of the interior chamber being in fluid communication with the second port; and
a sensor disposed in the interior chamber.
2. The valve apparatus according to claim 1, wherein the sensor detects a pressure differential between the first and second ports.
3. The valve apparatus according to claim 2, wherein the sensor detects displacement of the liquid in response to the pressure differential.
4. The valve apparatus according to claim 1, wherein the housing comprises external and internal walls, the external wall surrounds the interior chamber, and the internal wall projects from the external wall into the interior chamber.
5. The valve apparatus according to claim 4, wherein the internal wall comprises a tube extending between first and second ends, the first end being fixed to the external wall, and the second end being spaced from the external wall.
6. The valve apparatus according to claim 5, wherein the first end is in fluid communication with the first port, and the second end of the tube contiguously engages the liquid.
7. The valve apparatus according to claim 4, wherein the sensor is fixed to the internal wall.
8. The valve apparatus according to claim 1, wherein the sensor comprises at least one of thermistor, a capacitive switch, a float and contact switch, a magnet and reed switch, a resistive oil switch, an optical switch, and a resistance/conductance detector.

9. A bi-directional valve apparatus comprising:
 - a first vapor flow path extending from a first port, through a liquid, to a second port, and vapor flow along the first vapor flow path occurs when there is a first pressure differential between the first and second ports; and
 - a second vapor flow path extending from the second port, through the liquid, to the first port, and vapor flow along the second vapor flow path occurs when there is a second pressure differential between the first and second ports.
10. The bi-directional valve apparatus according to claim 9, wherein the first pressure differential comprises a positive pressure differential and the second pressure differential comprises a negative pressure differential.
11. The bi-directional valve apparatus according to claim 9, wherein the vapor flows along the first and second vapor flow paths comprise bubbling the vapor flows through the liquid.
12. The bi-directional valve apparatus according to claim 9, further comprising:
 - a sensor detecting a third pressure differential between the first and second pressure differentials.
13. The bi-directional valve apparatus according to claim 12, wherein the sensor detects the third pressure differential without the vapor flows along either of the first and second vapor flow paths.
14. A method of managing vapor pressure, the method comprising:
 - locating a chamber in vapor communication between first and second ports;
 - disposing within the chamber a liquid separating the chamber into first and second portions;
 - displacing a first volume of the liquid from the first portion of the chamber to the second portion of the chamber in response to a first negative pressure differential between the first and second ports;

displacing a second volume of the liquid from the first portion of the chamber to the second portion of the chamber in response to a second negative pressure differential between the first and second ports, the second volume being greater than the first volume, and the second negative pressure differential being greater than the first negative pressure differential; and

displacing a third volume of the liquid from the second portion of the chamber to the first portion of the chamber in response to a positive pressure differential between the first and second ports.

15. The method according to claim 14, further comprising:

flowing vapor in a first direction from the first port to the second port during the displacing the second volume, the flowing vapor in the first direction including passing vapor from the first portion of the chamber to the second portion of the chamber; and

flowing vapor in a second direction from the second port to the first port during the displacing the third volume, the flowing vapor in the second direction including passing vapor from the second portion of the chamber to the first portion of the chamber.